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$$m = 6$$

$$\begin{array}{l|l}
\left\{\begin{array}{cccccccc} + & - & + & - & + & - & + & - \\ + & 0 & 0 & - & + & - & + & - \end{array}\right. & \begin{array}{cccccc} + & - & + & - & 0 & 0 \\ + & - & + & - & - & + \end{array} \\
\left\{\begin{array}{cccccccc} + & + & - & - & 0 & 0 & + & - \\ + & + & - & - & - & + & + & - \end{array}\right. & \begin{array}{cccccc} + & - & + & - & - & + \\ + & 0 & 0 & - & - & + \end{array}
\end{array}$$

$$m = 7$$

$$\begin{array}{l|l}
\left\{\begin{array}{ccccccccc} + & - & + & - & + & - & + & - & + \\ + & 0 & 0 & - & + & - & + & - & + \\ + & + & - & - & + & - & + & - & 0 \end{array}\right. & \begin{array}{ccccccc} - & + & - & + & - & 0 & 0 \\ - & + & - & + & - & - & + \\ 0 & + & - & + & - & - & + \end{array} \\
\left\{\begin{array}{ccccccccc} + & + & - & - & + & 0 & 0 & - & - \\ + & + & - & - & + & + & - & - & - \end{array}\right. & \begin{array}{ccccccc} + & + & - & + & - & - & + \\ + & 0 & 0 & + & - & - & + \end{array}
\end{array}$$

for higher numbers the extra moves occur between the braces.

NOTES AND NEWS.

The Royal Society has awarded the Copley medal to Professor Felix Klein, of Göttingen, for his researches in mathematics.

A second, enlarged, edition of Professor W. F. Osgood's *Lehrbuch der Funktionentheorie* has appeared from the press of B. G. Teubner, of Leipzig.

Henry Holt and Company have just brought out a text on the *Theory and Practice of Mechanics* by S. E. Slocum, professor of applied mathematics in the University of Cincinnati.

Readers interested in studies of fundamental assumptions will enjoy a paper by A. B. Frizell on a set of 80 "Axioms of Ordinal Magnitudes," presented last August at the International Congress of Mathematicians.

A Peruvian knot record is described by Mr. L. Leland Locke in the *American Anthropologist,* April–June, 1912, p. 325. Apparently the knotted cords were used simply as numerical records. They seem to constitute "the earliest known decimal notation of the Western World, at any rate the earliest that admitted of easy transportation."

Professor Frederick Anderegg, of Oberlin College, will be absent on his sabbatical year during 1913–14. He expects to spend the time in Europe.

The Cambridge University Press has published a pamphlet of 51 pages by Sir Thomas L. Heath on "The Method of Archimedes," which was discovered by Heiberg in 1906 in Constantinople. The Greek manuscript in question is a tenth century copy of the works of Archimedes. Later the original writing was partially washed out and the parchment used for liturgical writing. In most places the original script is still legible. Among other works of Archimedes this manuscript contains "The Method" which had been thought irretrievably lost. It indicates the steps by which he worked his way to mathematical discoveries.

Professor F. Klein announced in the October–December, 1912, number of the *Jahresbericht der Deutschen Mathematiker-Vereinigung* that the mathematical volume, of the series of about 80 volumes which are being published by B. G. Teubner under the general title "Die Kultur der Gegenwart," will contain six monographs under the following headings: The relations between mathematics and general civilization; mathematics and philosophy; the mathematics of antiquity and the middle ages; the mathematics of the sixteenth, seventeenth and eighteenth centuries; the mathematics of recent times; the teaching of mathematics. The third of these monographs has appeared and the first and second are to appear before very long.

Professor W. D. Cairns, of the department of mathematics of Oberlin College, is offering this year, as last, a so-called outline course in mathematics, designed for those students who do not purpose to continue the study beyond the requirements of the freshman year. Beginning with the usual work in trigonometry as a prerequisite, this course gives the students a limited, but a definite, acquaintance with the essentials of plane analytic geometry and graphical methods, followed by a similar treatment of calculus methods, with applications throughout to geometry and mechanics, but more particularly to analytic and graphic treatment of economics, biology, etc. It is hoped that in this way those who major in the lines just mentioned may the more readily understand the mathematical matter which now forms so important a part of the development of these subjects. It serves also as an "informational course" for the general student who will never need to use the methods, but will wish to obtain thus a survey, exact as far as it goes, of this particular field.

The Library of Congress has published index cards of the parts of the German and French Encyclopedias which have appeared. Other cards will be issued as new numbers are published. These cards index not only the separate articles under their various authors but they contain also one or more general English terms indicative of the contents of these articles. For instance the card headed "Borel, Recherches contemporaines sur la théorie des fonctions," closes with the following sub-headings in English: (1) Functions. (2) Aggregates. (3) Integrals. (4) Series, Infinite. These cards can therefore be easily arranged in the form of a subject catalogue, and the Library of Congress furnishes duplicate cards for this purpose, at a reduced price. In view of the slow rate at which these encyclopedias are being published, it would be very useful to have index cards entering into greater details. The present cards will however do much to simplify the use of these standard works of reference, and the mathematicians are greatly indebted to Brown University for furnishing copies to the Library of Congress.

Errata in the February issue. On page 44, equation (1) should read $i\varphi = \log (i \sin \varphi + \cos \varphi)$. Likewise each ψ on this page should be replaced by φ. Also in line 16 from the bottom $e^{+r\sqrt{-1}}$ and $e^{+r\sqrt{-1}}$ should read $e^{+v\sqrt{-1}}$ and $e^{-v\sqrt{-1}}$.

On page 59, the names in line 7 from the bottom should be E. L. Bates and F. Charlesworth.